

Barriers to Sustainable Industry Institute Partnership and Remedial Measures

Viswanath Bellie

Dr. Mahalingam College of Engineering Technology, Coimbatore, India.

Corresponding author: viswanath@drmcet.ac.in

Abstract

The agenda for a robust IIP (Industry Institute Partnership) is well laid out by experts from both Industry and Academia with innumerable benefits for the stakeholders. For the Institute, a few benefits may be an improved curricula, specialized industrial training and projects for UG/PG students, consultancy/R&D, revenue generation and placements. For the industry, the benefits may be the availability of full-fledged engineers to take up challenging tasks in the industry, need based training for its employees and enhancement of business to name a few. Though the agenda is clear, the challenge seems to lie in the implementation phase of a specific program or project, where many pitfalls/bottlenecks pose a threat to the success of the program. An attempt has been made in this paper to highlight a few barriers to effective implementation of plans/ strategies like resource constraints, human factors, factors external to both the partnering organizations etc. The paper will also discuss the remedial measures to be meticulously carried out for removing these bottlenecks for realizing the objectives of a program/project.

Keywords: Sustainable partnership, strategies, pitfalls, remedial measures, models for improvement.

Industry Institute Partnership plays a major role in our economic development as two key players who produce the technical manpower and who use them for manufacturing and services are involved. Both the entities have a major role to play and will continue their painstaking efforts in the forthcoming days. The bottom-line is to excel in their programs and show a continuous improvement of the results. Both cannot work in isolation as their tasks are interdependent. The need of the hour is to recognize each one's strengths and help each other for mutual benefit. Industry generally works on timely targets and commitment to their customers, but they should realize that they have a social obligation to extend

a helping hand to their partners in progress-the institutions. The Institutions depend a lot on them for industrial visits, inplant training, faculty training, curriculum design, final year UG projects, guest lectures, placements etc. In turn, the Industry depends on Institutions of higher learning for their engineering graduates and skilled manpower- the human capital and also for research ideas and consultancy projects. Expertise is available in both areas and can be exploited for mutual benefit. Many top ranking institutes have established an IIP cell and many activities have been organized with tangible benefits for all the stakeholders. It is for the other beginners to flow their footsteps and establish themselves as good partners. Given below is a list of activities for mutual benefit:

Summer/Winter school training, In-plant training, Exchange of faculty members between Institutions, Seminars and Workshops, conferences (both National and International) on emerging fields of technology, Faculty Development Programs, Awareness programs/Sensitization programs, Short-term refresher courses, Site-based product/technology demonstrations, Industrial visits, Training Program for faculty, students and practicing engineers in a specialized area, contribution of experts in the teaching / training programs conducted by either organization through mutual consent, evaluating and updating curricula both for UG and PG, introducing new courses, modernizing laboratories and workshops, student project work, placements, personality development workshops for students on soft skills (Communication Skills), establishment of Innovationcenters and Centers of excellence, development of new technology, technical festivals/ exhibitions, promotion of income generating activities-testing, calibration, Consultancy and R&D, Joint research programs, technology transfer in the nearby rural areas.

From the above exhaustive list, it is evident that the scope for a good and beneficial interaction is wide enough to be exploited for growth of the stakeholders.

Literature Review

Good work has been done to explore barriers to R&D collaborations among public-private research organizations and academic institutes that are impediments to growth [22],[26]. Rapid changes in technology and ever-changing economy have compelled the companies to face the challenge of competition. This competitiveness has paved the way for alliances to meet these challenges and resulted in cooperative agreements and joint R&Ds [3], R&D clusters [19], inter-firms collaborations, [12],[18],[25] and R&D collaborations with universities [4],[16],[17],[20],[27]. Our Government and policy makers have encouraged Industry Institute Partnership all these years [1],[6]. Our Universities play a major role in our economic development [7]. Industries solve specific technical or design problems to develop new products for more competitive advantages [2],[8], [9], [11], [14]. Cultural differences between private firms and public university are constraining factors for transfer and diffusion of knowledge [13]. Organizations which are not creative and which lack innovation can be pushed out from business in the long run [21]. In his research with Japanese firms, Sakakibara [25] reasoned out that sharing of basic knowledge and specialized skill are most important objectives for R&D collaborations. Similarly, Brockhoff [4] in his research in Germany narrated that exchange of technical knowledge is imperative for making gains of R&D Collaborations. Many scholars have also supported the theory that the growing

range of collaborative measures and agreements among the innovating firms have emerged since the 1980s. It is universally acknowledged that universities are major sources of new knowledge, ideas and novelty, particularly in the field of sciences and technology [23]. Partnership between Industry and engineering colleges is an imperative need for sustainable development of the colleges [1], [15], [24]. Industry institute partnership should be elevated to public- private partnership to bring the people, the NGO's and the Government together for operation of educational projects [26]. Chinese government has consistently been in the favor of user-driven science policy requiring University Research Institutes to serve the national economy by solving practical problems for industry [16]. If barriers are not carefully addressed by both partners, collaborations may be weakened or may come to an end without fruitful and desired results. For this reason, these barriers should be carefully accosted prior to collaboration [13, 15].

Therefore, a common platform is needed to overcome or reduce the gap between collaborating allies for mutual benefits and appropriate gains. Institutional norms, uncertainty, information asymmetries, transaction costs research focuses, lack of insight in the specific research area and ever-changing technological complexities are hurdles for project execution in such clusters. If effectively implemented, Industry Institute partnership can reap rich rewards for all the stakeholders [5], [7], [10].

Barriers and Bottlenecks to Effective Implementation

Given below is a list of factors that may contribute to the failure of IIP activities. These are a list of pitfalls which should be avoided in general. Many factors listed may not be applicable in all cases.

People Related

- Staff members with sound knowledge of the topics planned not available- a problem of core competency.
- Managers in Industry may feel that training programs affect their targets and such programs are a hindrance to work. The commitment to do justice to the task might be missing.
- Lack of consistency and constancy of purpose. Well begun but diluted over a period of time due to lack of interest and change of priorities.
- Employee turnover- old team assigned the job not available due to transfers, retrenchment, dismissal etc.
- Industry personnel/Staff/students indifferent attitude to learning and lack of interest/ aptitude.
- Though the resources are available, these are not made available to the students/ staff due to fear of misuse/ abuse.

- Lack of leadership and motivation on the part of senior management to undertake a social responsibility.
- Differing ideologies/ goals and culture leading to a mismatch in the frequency of relationships.
- Lack of recognition & reward system for good work done.
- Academia is not aware of the needs of the industry and vice versa.
- The strengths of the teaching Institutions are not properly tapped and many findings and research results lie unutilized due to poor relationships and understanding.

Methods Related

- Time schedule of production operations in the industry and targets may not permit time for training programmes.
- Topics not well planned and course content not good enough to satisfy the basic requirements.
- Course objectives not clear - Lack of purpose.
- Programmes not tailor made for keeping one abreast with the latest technology.
- Communication gaps may cause the distortion of collaborations. Positive and proper communication leads towards smooth execution of R&D projects.
- Updating curricula is not a simple matter. Many industries should be involved before any concrete changes can be made. It cannot be a one-one relationship since the curricula is multidisciplinary in nature.
- Industrial visits are more like a picnic and superficial in nature. Students do not learn much during these visits. A more pragmatic approach to learning is required.
- A lot of expertise is required for introducing new courses. The career opportunities for new courses should be highlighted.
- Modernizing of labs and workshops is possible only if these can be used by both. The academic schedule should be carefully worked out.
- Student projects are not seriously done. Students work on some data given by the guide in the industry and these are superficial in nature. Both do not benefit from this exercise. Industry is not willing to part with useful data and they do not use the students to complete a challenging task.

- Placements are possible only after a many years of interaction. Often there is a mismatch between what is taught and what is expected.
- Methods adopted in each activity needs refinement.

Environment Related

- Environment not conducive for carrying out the activities.Lack of a people friendly environment with dedicated teams and with a sense of purpose.
- Poor ambience- Noise, hot and humid and dustyclimate, frequent movement of people.

Measurement Related

- Measurement of performance of each program not generally carried out.
- Measurement techniques not well planned.
- Poor feedback system of the actual performance to the higher-ups.

Resources Related

- Tools / techniques/ equipment are not available to match the courses planned.
- Monetary problems in allocating funds for a program.
- Firm size- Large firms are more suitable than small firms. More funds allocation and availability of core competence. Small firms do not have the resources to implement a successful program.
- Lack of transport and infrastructural facilities.
- Establishment of Innovation centers and centers of excellence need good expertise and funds.
- Development of new technology, consultancy and R&D need expertise and funds.

External Factors Related

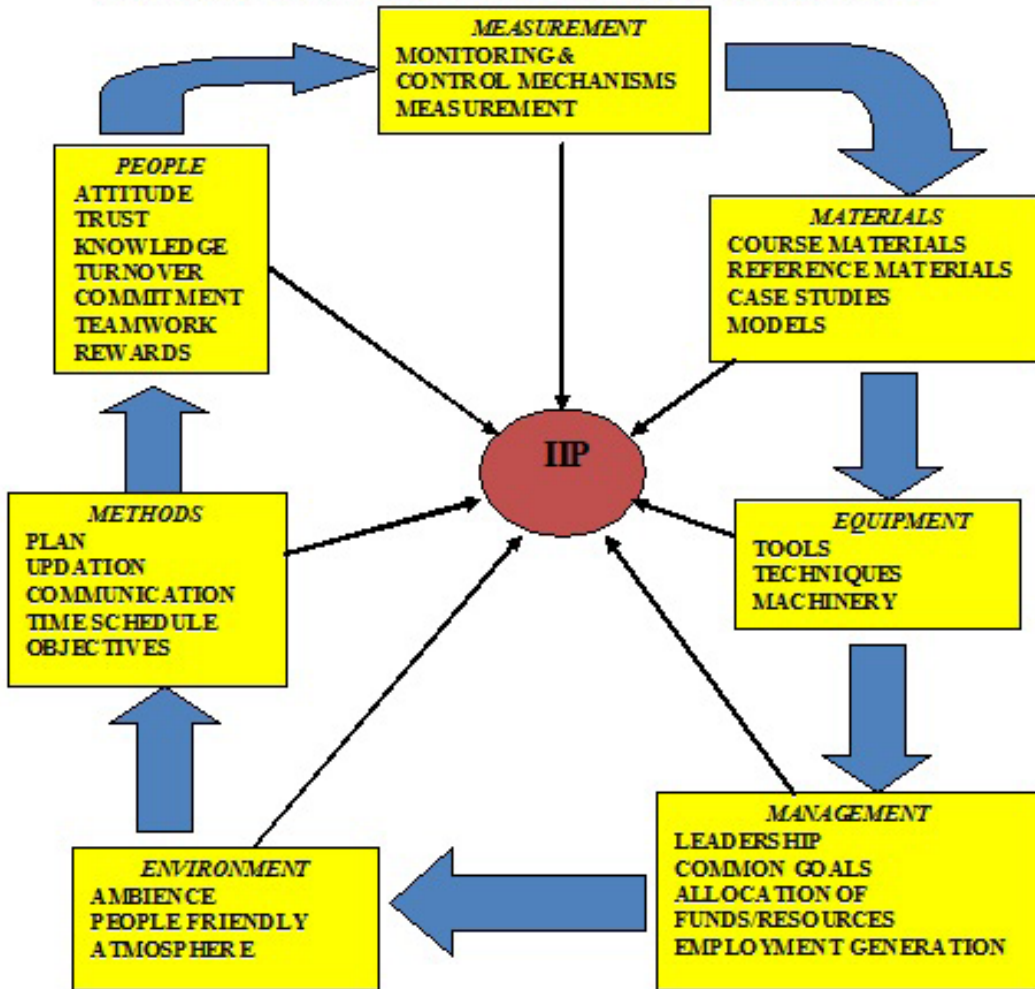
- Government policies- The bureaucratic influence and interference in the affairs of the partners can greatly affect the partnerships.
- Competitive threat- Fear that business practices/ design/ manufacturing methods might be leaked outside influencing competition – lack of trust and understanding.
- Technology transfer to nearby areas – we have to face the resistance to change from society.

Steps for Effective Implementation of IIP

The managers of the programs should display leadership skills, be role models and be committed to their tasks. Resources should be allocated as planned. There has to be a constancy of purpose and continuous improvement in all spheres of activity. Complacency should not set in. Tasks should be done as planned and there should be no room for procrastination. Both industry / Institute should recognize they are partners in progress and trust each other. A long standing relationship should be built on mutual understanding. The Government is proved to be a catalyst for materializing the alliances between academia and industry. The state support in the form of security, taxation, laws, regulations and policies greatly affect the partnerships and the favorable conditions accelerate such partnerships. A task force should be formed by both partners comprising of engineers, teachers and students and they should be given the accountability and responsibility to carry out the IIP activities only. Expressed differently, this team should be dedicated to IIP activities only and there should not be a mix up of tasks. The team members should put in their best efforts and contribute their might. Also assignments should be related to core specializations of people. A reporting system should be implemented and weaknesses and deficiencies are to be highlighted for corrective actions. A reward and recognition system will immensely motivate the team to involve themselves in their given tasks. The team members and their managers of both entities should meet and interact informally in the form of a get-together and “know each other” program, at least once in a month. A conducive atmosphere for working should be established. Low employee turnover is required. People should not leave organizations in haste. People should be empowered and be motivated to put in their best efforts. They should have a sense of belonging to the organization they are working. Sufficient time should be given by the managements during the learning phase of any program. Any mistakes committed by the people involved should be corrected without taking a serious view of the same, ending in penalties and punishments. Efforts should be taken for continuous improvement and holding the gains. An effective training program is required for IIP team members to keep them informed of the latest technologies.

The task of the IIP Cell is no doubt, a big challenge, but the benefits that an organization reaps in proper implementation of the programs planned, will keep them in good stead and pave the way for progress and prosperity in the long run. Organizations from both industry and academia should understand that they can never live in isolation any more. Success lies in partnering only and this should be the buzzword in both industry and academic circles.

FIGURE-1: MODEL FOR EFFECTIVE IMPLEMENTATION OF IIP



The model in figure-1 above shows that all the factors in the outer circle contribute for effective implementation of IIP. Also the outer circle consists of key areas which are all interrelated and flow of information is continuous and complimentary. The blocks represent the resources like men, money, machinery, management and methods. When there is a deficiency in any one area highlighted, it becomes a weak link in the chain and contributes for the failure of any program. Efforts should be made to strengthen all the above factors listed and the managers should meticulously watch for improvement. A feedback and monitoring system should be established for effective implementation of all the programs. A regular follow up action is required to keep the system agile and moving.

Conclusion

The above points highlighted may not be an exhaustive treatment of the subject discussed. Nevertheless, it is an account of the exposure the author has in his assignments both in Industry and teaching. Many of the points may not be applicable to all the stakeholders, as many institutes have a well established IIP cell and they are rendering yeoman service to the society at large. The problems have been discussed in general in order to avoid them for effective implementation of IIP programs. The remedies discussed may help in overcoming a few problems and it is up to the partners to chalk out their own steps based on their predicament and circumstances. It is the author's sincere hope that if properly implemented, IIP programs will be a boon for both the partners and all stakeholders involved.

References

- Dr. Anju Sigroha, Chahal, Anjali 2013, Industry- Institute Interaction: Searching New Horizons, *International Journal of Techno-Management Research*, **1**(2): 2321-3744.
- Baumol, W.J. 2000, "The Free-Market Innovation Machine", Princeton University Press, Princeton N.
- Bjerregaard, T. 2010, "Industry and academia in convergence: Micro-institutional dimensions of R&D collaboration", *Technovation*, **30**: 100–108.
- Brockhoff, K. 1991, Gupta AK, Rotering C, "Inter-firm R&D co-operation in Germany", *Technovation*, **11**: 219–229.
- Cyert, R. M., P.S. Goodman, 1997, "Creating effective university-industry alliances: An organizational learning perspective", *Organizational Dynamics*, **25**(4): 45-57.
- Dasgupta, P., David, P. 1994, "Towards a New Economics of Science", *Research Policy*, **23**: 487-522.
- D'Este, P., Perkmann, M. 2011, "Why do academics engage with industry? The entrepreneurial university and individual motivations", *Journal of Technology Transfer*, **36**: 316–339.
- Etzkowitz, H. Leydesdorff, L. 2000, "The dynamics of innovation: from national systems and Mode 2 to a Triple Helix of University Industry Government relations", *Research Policy*, **29**(2): 109-123.
- Gail Edmondson, *et.al.*, 2012, Making Industry Institute Partnerships Work, Lessons from successful collaborations, Science|Business Innovation Board AISBL.
- Gassol, J.H., 2007, "The effect of university culture and stakeholders' perceptions on university–business linking activities", *Journal of Technology Transfer*, **32**: 489–507.
- Hagedoorn, J., 1993, "Understanding the Rationale of Strategic Technology Partnering: Interorganizational Modes of Cooperation and Sectoral differences", *Strategic Management Journal*, **14**: 371-385.
- Hall, B.H., Link, A.N., Scott, J.T., 2001, "Barriers inhibiting industry from partnering with universities: Evidence from the advanced technology program. *Journal of Technology Transfer*, **26**(1-2): 87-97.
- Hartwich, F., Negro, C., 2010, "The Role of Collaborative Partnerships in Industry Innovation: Lessons from New Zealand's Dairy Sector", *Agribusiness*, **26**(3): 425–449.
- Holmberg, J., Samuelsson, B.E., 2006, Drivers and Barriers for Implementing Sustainable Development in Higher Education, Education for Sustainable Development in action. Technical paper No-3-2006, UNESCO Education Sector.
- Jiatao Li, 2010, "Global R&D Alliances in China: Collaborations With Universities and Research Institutes", *IEEE Transactions on Engineering Management*, **57**: 1.
- Johnson WHA, 2008, "Roles, resources and benefits of intermediate organizations supporting triple helix collaborative R&D: the case of Precarn", *Technovation*, **28**: 495–505.

- Kuac, K.C., Gurumurthy,C.K., Kao, H.P., 2007, “Inter-firms collaboration of joint venture in IC foundry business”, *Technovation*, **27**: 296–305.
- Lee, C.Y., 2009, “Do firms in clusters invest in R&D more intensively? Theory and evidence from multi-country data”, *Research Policy*, **38**: 1159–1171.
- Lee, Y.S., 2000, “The Sustainability of University-Industry Research Collaboration: An Empirical Assessment”, *Journal of Technology Transfer*, **25**: 111-133.
- Mowery, D., Rosenberg, N., 1993, “The U.S. national innovation system,” in *National Innovation Systems: A Comparative Analysis*, R. R. Nelson, Ed. New York: Oxford Univ. Press, pp. 29–75.
- Muhammad Fiaz and Prof. Yang Naiding, 2012, Exploring the Barriers to R&D Collaborations: A Challenge for Industry and Faculty for Sustainable U-I Collaboration Growth, *International Journal of u- and e- Service, Science and Technology* **5**(2).
- Pavitt, K., 1998, “The social shaping of the national science base”, *Research Policy*, **27**(8): 793- 805.
- Ramaswamy, C., Brahadeeswaran, D., 2013, “Establishing sustainable Industry Institute Partnerships- Case study of an Engineering College”, *AMET International Journal of Management*..
- Sakakibara, M., 1997, “Heterogeneity of firm capabilities and cooperative research and development: an empirical examination of motives”, *Strategic Management Journal*, **18**: 143–164.
- Prof. Shyamal Majumdar, Ph.D., *Industry-Institute Interaction to Public-Private Partnership: A Journey to Excellence*.
- Veugelers, R., Cassiman, B., 2005, “R&D cooperation between firms and universities. Some empirical evidence from Belgian manufacturing”, *International Journal of Industrial Organization*, **23**: 355–379.